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THE ANATOMY  
OF A  
RAILROAD REPORT

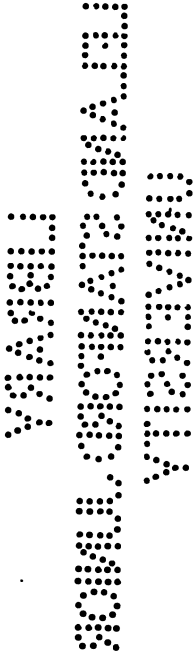
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## PREFACE.

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FEW investors in railroad securities take the trouble to make themselves acquainted with the actual condition of their property. Railroad reports are repellent to the vast majority of people by reason of their seeming complexity and technicality, and this is the principal reason why their study is left to experts.

Just at present every investor in railroad securities should exert himself to the utmost to obtain a clear idea of the state of his investment, for great and important changes in railroad conditions are in progress. With the object of enabling every one to obtain a fair idea of the real meaning of railroad reports the following pages are offered. An effort has been made to show, in a popular and non-technical manner, the process by which a report is built up, the information that is necessary to investors, the bearing of each portion of the report on the others, and, finally, certain rough principles upon which analysis of a report may successfully be based.

It is hoped that this book, representing as it does conclusions largely drawn from practical experience in the study of railroad reports, will serve as a rough key to unlock the secrets contained in the official reports fur-

nished to investors by the managers of our great railroad corporations.

Thanks are due to Mr. James Marwick, C.A., of this city, a gentleman of much experience in railroad and commercial accounting, for suggestions and emendations which have gone far to supply that technical knowledge and experience, which would otherwise have been wanting in this study.

*October, 1895.*

# THE ANATOMY OF A RAILROAD REPORT.

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## INTRODUCTORY.

It would be well if people generally understood the true meaning of a railroad report. To most it is a meaningless mass of unintelligible figures which are undecipherable and generally confusing. In order to assist the general reader to a proper understanding of the matter the following pages are offered in explanation of the manner in which a railroad report is built up. An effort to exhibit in a skeletonized form the anatomy of a railroad report will be made, and a method of procedure adapted to analysis of reports will be suggested.

The object of a railroad report should be to convey to proprietors an accurate idea of the position of their property, both physical and financial, so that they may know pretty well all the principal circumstances affecting its welfare. Obviously, it should disclose these points:

1. *Its earning power.*
2. *Its financial position.*
3. *Its main physical characteristics and conditions*, for when these are accurately known, the value of the property is known.

Thus a railroad report naturally divides itself into three parts.

1. *Income or revenue account*, showing income and expenditure.
-

2. *Financial statement or Balance sheet.*

3. *Physical statistics.*

Of these three probably the second is the most important of all, but the first is extremely important, as is, indeed, the third. No report is satisfactorily complete which omits any of them.

These three main divisions naturally divide themselves into several minor subdivisions as follows:

1.—INCOME OR REVENUE ACCOUNT should contain:

- a. *Gross earnings;*
- b. *Operating expenses;*
- c. *Net income from all sources;*
- d. *Charges for interest, etc., and all charges before dividends;*
- e. *Dividends and surplus.*

2.—THE FINANCIAL STATEMENT OR BALANCE SHEET should contain:

- a. *Statement of capital liabilities;*
- b. *Statement of capital assets;*
- c. *Statement of current liabilities;*
- d. *Statement of current assets.*

3.—THE PHYSICAL STATISTICS should show:

- a. *Length and characteristics of road;*
- b. *Number and description of equipment;*
- c. *Volume and character of business done.*

When these things are shown in sufficient detail it may be said that the report is complete. If any are wanting the report is imperfect. Of course, most railroad reports ordinarily give other information besides this. One expects, for example, an explanation from the president and general manager of any remarkable changes during the year in their respective departments.



It would be possible to extract an explanation from the figures themselves, if they are presented in sufficient detail, but it is well to have an official statement as well.

In these pages an effort will also be made to show in detail what enters into each account, and the bearing of each account on the whole. It must be remembered that the object is not so much to propound an abstract theory, as to show, in a practical way, with an example or two, the general lines on which reports are laid down.

It may be said at the outset that very few railroads publish a thoroughly complete and satisfactory report. The following roads are perhaps the best in this respect: New York Central, Lake Shore, Illinois Central, Chicago and Alton, Pennsylvania, Missouri Pacific (since 1893), Texas Pacific, Wabash, St. Paul, Northwest, Omaha, Louisville, Ontario and Western, Rock Island, Union Pacific, Southern Pacific, Chesapeake and Ohio.

Some roads which do not give sufficient information are: Burlington and Quincy, Lackawanna, Reading, Delaware and Hudson, Jersey Central, Baltimore and Ohio, Erie, Lehigh Valley (which for years published no balance sheet), Manhattan, Great Northern.

Roads in the first class have their failings, and roads in the second class have their merits, but, in a general way, the classification is fair. Perhaps New York Central and Chicago and Alton make the best reports of any road for comfort and ease of examination, whereas Manhattan and Lackawanna are very incomplete.

It is greatly to be regretted that there is not more uniformity in the reports of railroads in this country. In Great Britain all railroads report in precisely the same manner, so as to allow of very ready comparison.

## PART I.

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### CHAPTER I.

#### INCOME OR REVENUE ACCOUNT.

THE typical form for the INCOME OR REVENUE ACCOUNT of a railroad company, omitting detail, is as follows:

Gross earnings from operation....	\$12,000,000
Operating expenses.....	8,000,000
	<hr/>
Net earnings.....	\$4,000,000
"Other" income.....	250,000
	<hr/>
All income.....	\$4,250,000
Fixed charges.....	3,250,000
	<hr/>
Balance.....	\$1,000,000
Dividends.....	600,000
	<hr/>
Surplus.....	<u>\$400,000</u>

In this form such an account explains itself. It is naturally divided into three principal heads: viz., *income*, *expenses*, and *fixed charges*. The item of *surplus* more properly belongs to the Balance Sheet, and will be dealt with under that head.

## INCOME.

The income of a railroad arises from two principal sources: (1) *operation* and (2) *interest on loans and investments, or rentals*.

Gross income from operation consists of

- (a) Revenue from passenger transportation;
- (b) Revenue from freight transportation;
- (c) Revenue from baggage, storage, mail, stock yards, steamers, elevators, etc;
- (d) Balance of car-mileage, switching charges;
- (e) Telegraph companies, etc.

The chief point about these items is that all should be shown in gross. Rebates, being illegal, are, or should be, in all cases deducted from gross earnings. Commissions belong to operating expenses. The intention is to show in this account the absolute gross revenue derived from every branch of the company's business, before operating expenses are paid.

Obviously, there is not much room for mistakes in this part of the report. It used to be thought impossible to "cook" gross earnings, until Atchison showed how it could be successfully done over a series of years. It could not have been done in the case of this road, but for the magnitude of all items, and the complexity of the report, enabling suspicious items in the balance sheet to escape notice. If all the items in a company's capital account are shown in proper detail, and, especially, if the "cost of road" and "construction" items are sufficiently detailed, it is impossible for any one item to be manipulated, without throwing all the others into confusion, thus leading to immediate discovery.

For example: suppose gross income to be overstated

by \$500,000 and an unearned dividend thus paid for speculative purposes. An increase will probably be effected in "*current liabilities*," as the money will most likely have been borrowed for the dividend. This involves a corresponding increase of \$500,000 on the "assets" side of the balance sheet. If all the "assets" are properly stated with sufficient detail in the report, the fraud must be discovered at once. It is desirable therefore that gross earnings be shown in considerable detail, and that the assets and liabilities be complete.

2. "*Interest on loans and bonds held as investments*," "*dividends on stocks owned*," and "*rentals received on property leased*," are all simple enough items. The report should give an itemized statement of stocks and bonds held, and of rentals received for property leased, so that all this income can be properly traced to its source. Very few companies do this in a satisfactory way. In the case of some, as will be shown hereafter, "*other income*" has been used in connection with "*current assets*" as a means of paying unearned dividends.

There are other sources of income besides those enumerated, but they are not large enough to require special attention, unless, of course, railroads operate coal mines, etc., and, if they have sufficiently elastic charters, conduct all kinds of miscellaneous business, in addition to the ordinary business of transportation. In the case of coal-mining and such like operations conducted on a large scale, a separate return should be made, and the final result shown in the shape of "*other income*" or charges against "*surplus*" or "*profit and loss*" account.

The "INCOME ACCOUNT" of properties leased should

be shown separately in the report. That of proprietary companies should be included in the general income account. In this respect the New York Central report is faulty. It should show the operations of all roads leased, from the Rome, Watertown and Ogdensburgh (inclusive) down to the New York and Putnam, which it does not. It should be possible to learn from a report just how every leased property is doing, and whether the lessee makes a profit or a loss on its operations.

In conducting any large manufacturing or warehouse business successfully, a thorough system of cost books is kept, that the owners may thereby allocate to each department or even contract its proper share of expenses. Thus they know at once whether or not a department is or is not self-sustaining, or whether a contract pays or not. Such information is necessary for the proper conduct of other businesses, and it is most emphatically necessary in the case of a railroad.

#### OPERATING EXPENSES.

This is an extremely important item in a railroad report, and is deserving always of the closest attention. It is the item, of all others, most susceptible of manipulation, and the most suggestive and illustrative of the management of a property. It cannot possibly be shown in too great detail in a report. As a rule it is not made sufficiently clear.

The general theory of operating expenses may be said to be this: a railroad should charge to this account all expenditures necessary to conduct the company's business and leave the property at the end of the year in at least as good condition, in all respects, as it was at the beginning of the year. In theory, anything, which im-

proves the condition of the property, may be charged to capital account, as may all additions which are not replacements. This is the strict theory, within which almost all roads conduct their operations.

The importance of a proper classification of operating expenses may be seen from the fact that the Inter-State Commerce Commission has issued a pamphlet, for the use of railroads reporting to it, which embodies the views of the most experienced railroad men, and represents about four years of work. This pamphlet divides "operating expenses" into four classes:

- (1) *Maintenance of way and structure;*
- (2) *Maintenance of equipment;*
- (3) *Conducting transportation;*
- (4) *General expenses;*

and divides each of these classes into a large number of subdivisions, of which there are no less than fifty-three in all.

#### CONDUCTING TRANSPORTATION.

This item includes all expenses in connection with the business of hauling, transporting, or storing freight and passengers, and its main subdivisions may be given as follows:

- (a) *Salaries and wages (operating department);*
- (b) *Supplies (operating department);*
- (c) *Car mileage and switching charges;*
- (d) *Damage for injuries, and advertising;*
- (e) *Outside agencies and commissions;*
- (f) *Rents of tracks, yards, and terminals.*

In this account should be charged all wages and salaries of persons employed in the direct operation of the road, as distinguished from maintenance, and all supplies used

for this purpose. The rents for tracks, yards, and terminals should include all those paid in connection with direct operation. "Commissions" should only be included specially in this account, when paid to persons not employed by the company. All these items should be shown clearly and distinctly, in as great detail as possible.

#### MAINTENANCE OF WAY AND STRUCTURES.

This is one of the two most important items of operating expenses. Under this head come all charges in connection with the maintenance of the permanent way and structures in good condition. It may be divided as follows:

- (a) *Repairs of roadway ;*
- (b) *Renewals of rails and ties ;*
- (c) *Repairs and renewals of bridges, culverts, fences, crossings, signs, cattle guards, stations, buildings, docks, wharves, and telegraph.*

The item "*repairs of roadway*" includes everything pertaining to the track, that is, everything but the actual cost of the rails and ties laid down. It should include the cost of clearing the roadway of snow or ice; the cost of ballast of all kinds, and the putting of it in the track; also all wages and supplies of the department.

The item "*renewals of rails and ties*" is very important and should be very detailed. The report should state the number and cost of ties laid, and the proportion of the track so laid; also the amount and description of rails laid, and the proportion of the track relaid therewith. It is allowed to a company to deduct from the charge for new steel rails the value of the old rails

taken up. Some companies, however, adopt the practice of charging to "construction" the difference in the value of the new rail and the original value of the old rail taken up. If for example, a 60-pound rail is replaced by an 80-pound rail, the extra 20 pounds are charged to capital. This is a reprehensible practice, and often a sign of something radically wrong.

Every railroad should replace a proper amount of rails every year. The average life of a steel rail varies very much on various roads, as does also the life of a tie, to a lesser extent. Supposing, for argument's sake, however, that the average life of a rail is twenty years, and the average life of a tie eight years, a road should relay at least one-twentieth of its track each year, on an average, with rails, and one-eighth with new ties. If it does not do this, it is "skinning" the road, which is a danger-signal to investors.

The item "*repairs and renewals of bridges, culverts, fences, etc.*," is simple enough. Most companies will charge to construction the cost of an iron or stone bridge in excess of the cost of the trestle replaced, and the cost of similar improvements in docks, wharves, buildings, culverts, etc. It is much more reassuring to see this met entirely out of operating expenses.

In the proper operation of a railroad the item

#### MAINTENANCE OF EQUIPMENT

needs very careful attention, and a most complete and detailed form of statement in the report. There should be charged to this account, every year, at least that amount of money necessary to keep all the company's rolling stock, marine equipment, and repair shops in good condition, so that, at the end of the year, every-



thing shall be in a state of as great efficiency as it was at the beginning of the year. Obviously, therefore, the number of the company's cars, locomotives, boats, etc., should be intact at the end of the year, or "*maintenance of equipment*" should be charged with the cost of maintaining the number intact.

A rather common practice of railroads is to consider their freight cars by capacity, and not by number, and to regard their duty of maintenance as fulfilled, when the freight equipment has as great a capacity at the end of the year as at the beginning. For example, such a road would consider that it had done all that could reasonably be expected, when it had replaced twenty 10-ton cars by ten 20-ton cars. No doubt this is strictly correct, as far as the theory goes. When, however, a change in the character of the equipment becomes necessary, in order to hold trade (as in the case of Reading, a few years ago), it would be better policy to pursue a liberal course, and construe the theory less strictly.

The details of a company's equipment report should be closely watched. A good many companies, instead of making replacements out of expenses, will allow a large amount of equipment to be destroyed, and finally replace it in one form or another out of capital.

In bad times companies have a habit of postponing renewals and repairs of equipment. The report, in such cases, usually shows either a large shortage of equipment, or a large proportion of the equipment "in hospital," or unfit for service. Either of these signs are danger signals, and should be closely investigated.

A report should carry a special account for "equipment," in which should be shown all capital charges on this account from the outset, in such a way that it could

be possible to see the book-cost of the company's equipment, separately for locomotives, passenger cars, freight cars, and marine equipment. Very few roads do this satisfactorily. It is probable that there are not a dozen roads, in the whole country, which could show this account properly charged from the beginning, except those which have closed their construction account permanently. Proof, however, is extremely difficult to obtain, because few roads supply the information necessary.

The item, however, is one demanding very close inspection in the analysis of a report or the examination of a property.

#### GENERAL EXPENSES.

This item includes salaries of general officers and clerks, law expenses, and insurance, etc., and is the least important and significant of any of the operating charges.

It is easy to see how valuable an index to the condition and management of a property is a clearly detailed and complete schedule of operating expenses. One part of such a schedule, moreover, will throw light on another in a striking way, at times. Those curious in such matters will do well to look up the Reading reports for the few years prior to 1893, and see how clearly the item of "conducting transportation" taken in connection with the "maintenance" accounts, showed the "skinning" of the property. It is, of course, quite impossible to lay down a hard and fast rule as to the proportion which "maintenance" expenditures should bear to the whole, but comparison of a given road with itself a few years back, or with a neighbor, will often show instructive results.

As a general rule, a large increase in "conducting transportation" should be accompanied by a large increase in "maintenance." If there is a discrepancy in this respect, it should be looked into at once, especially if the road is free with capital issues, or has treasury bonds available for sale.

The proportion of operating expenses to earnings varies greatly, and often apparently without reason. A company which professes to operate at a very low ratio should make it very clear how it can do so. A ratio of seventy per cent. is much more comforting to an investor than a ratio of sixty-five per cent., on general principles, although circumstances might be conceived which would make the former an unsafely low rate, and the latter a liberal rate.

In any case, the operating expenses of a road deserve very close scrutiny by any one who wishes to make himself acquainted with its value. If there is anything wrong, it is most likely to show itself first in this department in a low ratio, and a small "maintenance" account.

#### FIXED CHARGES.

The item of "*fixed charges*" in a report includes as a rule the following charges:

- (a) *Interest on funded debt ;*
- (b) *Interest on floating debt ;*
- (c) *Rentals ;*
- (d) *Taxes ;*
- (e) *Sinking funds ;*

although exception may be taken to one or two of these. Still, all of these are charges prior to dividends on capital stocks, and, as such, come under the generic term of fixed charges.

With regard to "*interest on funded debt*," all that is needed is that it be stated clearly and separately. There should be a statement of the amounts and kinds of bonds outstanding, and the interest thereon. The charges for "*interest on unfunded or floating debt*" should also be specially set forth alone. It will be remembered that the Missouri Pacific reports of 1893 and 1892 did not do this, with the result that few people were aware that the interest had not been charged up in those years, until they saw the 1894 report, which admitted this. Obviously, this is an undesirable state of affairs. It is also of interest to know how much the company's floating debt costs to carry.

The item of "*rentals*" should be stated in sufficient detail to enable one to separate the rentals for each piece of property from the rest. As stated when dealing with "*gross earnings*," it is desirable that the income account should show the gross and net earnings of any piece of property leased and operated, or leased only. In this way it can be seen whether or not a property is profitable to the lessee or not.

"*Taxes*" explain themselves. It seems that "*operating expenses*" would be the most natural place for them, but common usage places them among other "*fixed charges*." All that is required is that they shall be separately stated in the report.

The item "*sinking funds*" is peculiar in some ways, and is treated differently by various roads. The theory of sinking funds is that a certain sum should be set aside from net earnings, to be applied to the redemption of bonds, in addition to the payment of regular interest thereon. Some mortgages expressly provide for a sinking fund, as, for example, certain mortgages of the Chicago and Alton, Burlington and Quincy, St. Paul,

Northwest, Union Pacific, etc., and the proper way is for sinking funds to be met out of earnings. The usual course with such is to draw a certain quantity of bonds every year for repayment, where so provided, or to purchase a certain quantity of bonds, which are kept alive in the sinking fund. The interest on bonds in a sinking fund belongs to the fund, and should not be used for other purposes.

In "*sinking funds*" should also be included and stated separately payments on account of principal of car trusts, equipment trusts, etc., these amounts usually being calculated over a series of years. Obviously these are a prior charge to dividends, as the essence of an equipment or car trust is that it shall be paid off out of revenue. It is not usual for roads to make car trusts or equipment trusts, unless funds cannot be obtained in other ways, as by sale of securities. Speaking generally, car trusts are a sign of poverty, although there are exceptions, as, for example, Pennsylvania, which has several car and equipment trusts.

When "*fixed charges*" have been deducted from the total net income, the balance is the "*surplus*" that properly belongs to the stockholders, and is subject to their directions. It represents the profit of the business, after all prior charges have been met, all expenses paid, and the property sufficiently maintained. Out of this surplus comes whatever dividends are paid on the stocks, preferred and common, of the company. Against it, however, may be (and should be) written off any extraordinary losses, or depreciation not covered by operating expenses, as, for example, depreciation of investments held, bad debts, etc. What remains after this is done becomes "*surplus*," and is added to "*profit and loss*" or "*surplus income account*."

This "*Profit and Loss*" account is a necessary concomitant of the company's "INCOME ACCOUNT," as it shows the application of the company's surplus income. A typical form thereof is as follows:

By balance, June 30, 1893.....	\$4,800,000		
Surplus income year ending June 30, 1894...	\$400,000		
To adjustments....	\$100,000		
Depreciation stocks and bonds..	100,000	200,000	200,000
Balance June 30, 1894.....	\$5,000,000		

A "*Profit and Loss*" account may also be arranged so as to exhibit the payments for expenses, fixed charges, and dividends, but, if these are clearly stated elsewhere, this is unnecessary. The above is a proper complement to the form of "INCOME ACCOUNT" given before.

This completes the information necessary to give a fair idea of the "*earning power*" of a property. It is, however, advisable to reduce the amounts to a "per mile" basis, for purposes of ready comparison with other roads. Most reports do this in the case of gross earnings, operating expenses, and net earnings, and there is no reason why they should not also do it for interest and fixed charges, and dividends, so as to make a complete showing. Any one can do it, however, for himself.

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## CHAPTER II.

### THE BALANCE SHEET.

WE now come to the most important individual item in a railroad report, which is absolutely indispensable to a clear understanding of a company's position. That is the FINANCIAL STATEMENT or BALANCE SHEET. If no

other piece of information regarding a company were obtainable than this, quite a good deal might be gleaned from it, and, if only one account were given to the public, this account would be the one to ask for.

It consists of a statement of the company's "*assets*" and "*liabilities*," viz., what the company has, and what it owes at the date of the report. In theory, a balance sheet should be extremely simple, but in practice it is often extremely complex. There is not a railroad in the country which should not be able to issue its balance sheet in an intelligible form which would need no explanation, yet there are hardly a score of roads which do not offer in their reports a balance sheet needing explanation very badly in the case of several items.

Any balance sheet can be condensed into the following:

DR.	CR.
ASSETS.	LIABILITIES.
<i>Capital assets.</i>	<i>Capital liabilities.</i>
<i>Current assets.</i>	<i>Current liabilities.</i>
<i>Profit and loss (deficit).</i>	<i>Profit and loss (surplus).</i>

"*Profit and loss*" may be on either side of the account, according as there is a debit or credit balance thereto.

Obviously there are a very large number of items which may be, and in fact ought to be, presented under the main heads. Some roads err on the side of incompleteness; others on the side of diffuseness; most on the side of obscurity.

#### CAPITAL ASSETS.

The item of "*capital assets*" contains:

(a) *Property and franchise, equipment and plant,*  
or "*Cost of road and equipment.*"

(b) *Investments in securities and real estate.*

(c) *Sinking funds.*

The item "*property and franchise equipment, etc.,*" is what is known as the "*construction account*" and represents the capital invested in the road and equipment. It is often customary, also, to charge to this account certain other items such as "*discount on securities sold,*" and other items of cost incurred in acquisition of property, or in improvement of property, as described in the articles dealing with "*operating expenses.*" To this account must also be charged expenses in connection with financing of capital issues, or reorganization of the company.

Obviously, the charges to "*construction account*" are capable of much abuse, and it is extremely desirable that a road should report, as does New York Central, each year, the exact constitution of its "*construction account*" and the items making the total thereof. The account should be presented each year in such a way as to afford a means of accurate comparison of item with item, present with former reports. It should be possible to see how much money has gone into equipment, bridges, fences, etc., over a series of years. In this way it would be impossible for a railroad to use its "*cost of road, etc.,*" account to juggle with.

Most railroads give in their reports a statement of the annual charges to "*construction account,*" but this is comparatively seldom as complete as one could wish, and often it does not agree with the charge in "*cost of road*" items, by reason of the latter containing items not covered in the separate statement of "*construction account.*" The actual magnitude of a road's "*construction account*" is not of individual importance, but is only important for purposes of comparison with itself



at an earlier date. There is probably not a single road in the country, whose "*construction account*" does not contain a vast amount of items representing absolutely no value. Take, for example, the case of the Atchison company. According to Mr. Stephen Little, the "*cost of road and appurtenances*" stood at \$95,755,207 last year. Of this amount over \$40,000,000 stood for nominal entries, such as "*discount on bonds*" and "*reorganization expenses*," and less than half of the total really represented "*cost of road*." The whole importance of the item, in fact, is in the changes reported in it from year to year, which must be fully and accurately accounted for.

The principle may be laid down that in a report of a railroad with a lot of subsidiary roads owned or controlled, a special revenue account should be given in which the "*gross earnings*" would include only the earnings of that property included in "*cost of road*." If the properties appear in any other way in the balance sheet, (as in "*investments in securities*") a separate income account should be shown, especially if the bonds are guaranteed by the main system. Very few roads make it possible to see how their controlled and proprietary roads are doing. The point is an important one.

"*Investments in securities or real estate*" is an item which is satisfactorily shown by comparatively few roads. Almost every road in the country owns a large quantity of stocks and bonds of other roads. These may be acquired in a great variety of ways; by buying outright for purposes of control, by exchange of stock for the same purpose, by original subscription, in payment of advances made, in payment for construction-work done, etc., etc. It may be said that the majority of the

stocks and bonds held by most companies are held for the purpose of controlling other roads. There are exceptions of course: take for example the \$5,000,000 Western Union stock held by Baltimore and Ohio, which rumor has so often sold, but there are not a great many such cases.

The importance of a clear showing of the item of "*investments in stocks and bonds*" lies in the effect of this item on "*other income*" in the income account. The revenue derived from dividends and interest on stocks and bonds owned ought to be stated separately and distinctly. The importance of showing the operation of a company's proprietary and subsidiary roads separately, lies in the inclusion of the profits from this source in "*other income*." If these roads are included in "*cost of road*" this need not be done, but it is distinctly necessary that "*other income*" be shown in detail as to every item. There should, therefore, be in every railroad report a schedule showing the exact holdings of stocks and bonds, and the revenue derived therefrom. This, moreover, would supply a clew to the value of the company's investments in securities. Unfortunately, most companies are not desirous of much light being thrown on these things.

When a portion of a company's securities are employed to secure an issue of collateral trust bonds, as is the case with many roads, the hypothecated securities should be grouped separately. Some roads do this, others do not; all should.

The item "*Sinking funds*" may best be shown in the balance sheet in detail, separating the bonds owned from the uninvested cash, belonging to the fund. There should be, however, a separate statement of sinking funds showing each kind of bond separately. The best

way is for a road which has sinking funds to show on the "LIABILITIES" side of the balance sheet all bonds issued, whether in sinking funds or not, and charge revenue with the full interest thereon. Interest on bonds in a sinking fund belongs to that fund, and should not be diverted therefrom, although some roads (Baltimore and Ohio for example) use it for general purposes. For this reason it is better to exhibit sinking funds as described above.

Payments on account of principal of car trusts should be treated in the same way as sinking funds.

#### CURRENT ASSETS.

The "*current assets*" of a road include all the shifting and changeable assets (with the exception of "*material supplies*," which is a strictly capital asset) which may be used for the purpose of liquidating, at any time, the ordinary business debts of the property, without touching on the capital assets. They include:

- (a) *Cash on hand and on deposit ;*
- (b) *Loans and bills receivable ;*
- (c) *Accounts receivable ;*
- (d) *Due from other companies and individuals ;*
- (e) *Due from the company's agents and officers ;*
- (f) *Advances to other companies ;*
- (g) *Sundry assets ;*

Almost all railroads in this country exhibit the item of "*cash*" in a satisfactory way, and the item needs no comment as long as this is done. Some roads make a practice of carrying a great deal of cash on hand, while others carry very little. When there is little cash on hand extra vigilance on the part of the investor may often prove useful.

"*Loans and bills receivable*" do not ordinarily form a very large part of a railroad's assets. They consist of loans made by the road, or notes held by the road. If shippers owe money for freight transported, and give their notes therefor, these would naturally appear as "*bills receivable*." Very few railroads are absolute lenders of money in any quantity. It would be a good thing if, in this case, the good loans and notes were separated from the doubtful or absolutely bad. The latter, of course, should be written off to "*profit and loss*." All roads, in time, acquire rubbish in the shape of loans and bills receivable. Very few, however, write them off as they should, but carry them on from year to year, till possibly bankruptcy and reorganization disclose them. A steadily growing volume of "*loans and bills receivable*" is not as a rule a good sign.

"*Accounts receivable*" explain themselves. It is one form of stating the amount due to the road by shippers, and others, in the ordinary way of business; and is not of itself a very important item. Nor is the item "*due from other companies and individuals*" of itself a very notable entry, including as it should merely debts due by shippers, and traffic balances due by other railroads. If the report, however, include no item for "*advances to other (proprietary or subsidiary) companies*," and the item "*due from other companies and individuals*" is large, there is reason to suspect something wrong, especially if the company have many branch or subsidiary roads, or allied companies.

This item "*advances to other companies*" is very common among railroads. It may mean a number of things, but is chiefly important when it means, as it often does, money loaned by a company to weak, struggling, allied companies, whose bonds are guaranteed by

the main company, or of which control is held by ownership of stock, etc., etc. Although strictly a nominal asset, inasmuch as, theoretically speaking, the advance is a charge against the debtor road, which might be met at some time in the dim and distant future, practically it is money lost, and represents the deficit or loss on those roads, unrecoverable except by a miracle. These "*advances*," however they appear in the balance sheet, are almost always of the same kind. Their significance lies in the change they produce in the other side of the balance sheet.

A certain company last year, increased its bonded debt by \$1,500,000 approximately, and increased its "*advances to other companies*" by about the same amount, and, strange to relate, its "*other income*" showed a wholly remarkable increase, considering the known circumstances of the case. What happened was most certainly this. Being in need of increased revenue for dividend purposes, the company loaned the proceeds of its \$1,500,000 bonds to one or two of its controlled companies, enabling them to increase their dividends, thus making a larger "*other income*" to the main company from its investments in the controlled companies, and accomplishing the desired result. Inasmuch as the accounts of the subsidiary companies were not published, the transaction passed muster, but, in effect, it amounted to nothing less than selling bonds and applying the proceeds to dividends. The essence of the danger in the "*advances to other companies*" item lies in the absence of publicity of detail regarding these other companies, and it is for this reason that a clear statement of operation for all controlled proprietary or leased roads (not included in "*cost of road*") is eminently desirable. Otherwise, much of importance can-

not be traced. The manipulation of "*advances, etc.*," with "*other income*" and increased floating or funded debt, is very easy to work, in the absence of full details.

Even if there is no suspicion of anything like this, it is an unfavorable sign when money is evidently being poured into unprofitable and struggling subsidiary properties. Eventually it must either come to a wholesale writing off, as in the case of Louisville and Nashville last year, and Erie and Pennsylvania, or to discovery in reorganization.

The items "*due from agents and officers*" and "*undry assets*" need no special description, the first being plain on the face of it and the latter seldom of importance. The fewer and simpler the items of "*current assets*" the better; it denotes a "cleared up" condition of affairs.

#### CAPITAL LIABILITIES.

The capital liabilities of a company are of two kinds:

1. *Stock* ;

2. *Bonds, income, debenture, or mortgages* ;

the latter class also including car-trusts, real estate mortgages, and any similar fixed obligation.

There is no definite theory regarding the relative proportion which the funded debt and stock of a company should bear to the actual cost of the property. It is a fact, however, that, in the case of most railroads in this country, the road was built from the proceeds of bonds, and, therefore, the stock represents chiefly contractors' and promoters' profits. This, however, is of little real importance, as the "*cost of road*" is of itself unfortunately quite a "blind" item and only significant in its changes from year to year.

The balance sheet should show—and all balance sheets do—the amount of capital stock of the company outstanding, whether or not any is owned by the company. “Treasury stock,” if any, should be separately shown among the assets. It is desirable that the balance sheet should show the various kinds of stocks separately, first and second preferred, and so on, instead of “lumping” them into one item.

It would also be a good thing if every railroad report showed the amount of capital stock per mile of road owned. It is oftentimes not very easy for investors to arrive at a correct amount, in consequence of complicating circumstances, and therefore such calculation would be all the better for being official.

The funded debt of a company may consist of many kinds of securities, as:

1. *Mortgage bonds* ; ✓
2. *Debenture bonds* ; ✓
3. *Collateral trust bonds* ;
4. *Income bonds* ; ✓
5. *Real estate mortgages* ;
6. *Equipment trusts* ;

all of which should be specified in detail without deduction of bonds owned or in sinking funds, as these should be specially shown on the other side of the balance sheet as already stated. Bonds held in the treasury, issued, but not sold, should be separated, of course, from bonds held in sinking funds. A special list of the company's funded obligations should also be given in the report, showing the interest charges on each kind of bond, the date of interest payment, and the date of maturity.

Inasmuch as the funded debt of most companies consists chiefly of bonds secured by mortgages, on the whole

or various parts of the system, the amount of such bonds per mile of road is a very important consideration. The report should, therefore, contain a clear statement of the mortgage debt per mile of road, showing the underlying liens or divisional mortgages separately, each on its own part of the road. One of the first things that is looked at in beginning an investigation as to the value of a company's securities is the amount of mortgage and bonded debt per mile of road. Where there are divisional mortgages, moreover, it is very desirable that it should be shown what they cover, because, although the guarantee of the main company is behind them, it is found in practice that a divisional mortgage that is not absolutely secured of itself is not much more secure by reason of a guarantee. Experience has often proved that when a guarantee is required to be made good it is found to be valueless. Divisional bonds should therefore be judged strictly on their own merits, and the report should supply the material for such judgment.

Where there are *collateral trust bonds*, there should be in the report a schedule showing the collateral securing the bonds in detail, and the revenue from the securities held as collateral. Very few roads do this, although the information is, in reality, vital; especially when a road is in difficulties.

*Debenture bonds* unless secured by mortgage are simply "promises to pay," and have no special lien on the company's property. They differ only from *income bonds* in that they promise a certain amount of interest at stated periods.

*Income bonds* are generally a species of hybrid mortgage. The theory is that they shall receive interest only when earned, and, in default of receiving interest when it is earned, they have mortgage rights. Some income



mortgages (as those of the Reading) specify the deductions permissible from net earnings before payment of income interest, but the experience of Reading income bondholders shows that an income mortgage bond, no matter how carefully the mortgage be drawn, is little if any better than a preferred stock.

The report of a railroad should state clearly the change in the company's funded debt since the previous report, and the reason of the change. Everything pertaining to the funded debt of a company is important, as relating to the extent to which the property of stockholders is encumbered.

#### CURRENT LIABILITIES.

This item is often the most important item in the balance sheet of a railroad, and is always one of the first things to which one should look for an index to a railroad's condition. The principal items which fall under the head of "*Current liabilities*" are as follows:

1. *Loans and bills payable;*
2. *Accounts payable;*
3. *Pay-rolls and vouchers;*
4. *Interest and dividends accrued;*
5. *Due to other companies (traffic balances);*
6. *Sundry liabilities.*

These may be subdivided into strictly "*operating liabilities*" and "*floating debt*." The distinction, however, from the investor's point of view, is one without a great deal of difference, although some roads affect to draw the distinction closely. The fact is that, for all intents and purposes, all the items shown above are floating debt.

No railroad can show an accurate balance sheet with-

out a "floating debt" consisting of certain operating liabilities, because it is physically impossible for any road to get all its bills paid up at once. The operating liabilities, however, should never show more than about two months' items. Some roads are notably prompt in this respect, as, for example, the Denver and Rio Grande. When a railroad allows its operating expenses to run into arrear for three or four months and they thus become unduly large, there is surely trouble ahead.

Of the item "*loans and bills payable*" *loans* generally represent money actually borrowed by the company. Usually this item represents one of two things, either new funded debt in embryo, or trouble. No railroad borrows money on its notes unless it has construction work in hand, which calls for cash when it is inconvenient to sell bonds, or unless it needs cash for dividends or interest payments, pending the realization of some of its *current assets*. Most railroads, however, do carry a floating debt more or less all the time, of various amounts. Needless to say, when the amount varies only one way, viz., increases steadily, it means trouble. Missouri Pacific's floating debt was an example of a funded debt in embryo, steadily increasing, and now funded into *collateral trust bonds*. The Erie floating debt would have represented embryo funded debt but that the company could not fund it, and consequently went down under it.

As a general rule, a railroad is in a stronger position if it owes no "*loans*" or "*bills payable*." The item "*accounts payable*" is not so serious, representing chiefly money owing for supplies. As long as this is kept within reasonable bounds it is not significant, being an operating debt which must of necessity exist for a time, and then be replaced by another debt, represent-

ing another periodical accumulation of bills awaiting payment. The same remarks apply to "*pay-rolls and vouchers*" and "*traffic balances*" representing wages of employees, audited accounts for supplies, etc., similar to "*accounts payable*," and balances due to other roads. As long as these are moderate in amount, they are harmless, and an entry for them in the balance sheet is expected.

The item "*interest or dividends accrued*" or "*declared payable*," must be offset by *current and quick assets* on the other side of the balance sheet. This item should, strictly speaking, be represented by cash. A road is badly off, as a rule, when its cash available is not a good deal more than its accrued interest or dividends payable.

"*Floating debt*" or "*current liabilities*" may take other forms than those given above, but all such can be resolved into one of three classes of liabilities, viz.:

1. *Money directly borrowed;*
2. *Money owed for various purposes;*
3. *Money due in a short time.*

All debts coming under these heads are "*current liabilities*" generically known as "*floating debt*."

It is very easy to see when a company's "*current liabilities*" are a healthy charge, representing the play of its ordinary operations. Some companies, however, make a practice of showing only the net balance of their "*current liabilities*," and "*current assets*," instead of showing each separately. Inasmuch as it is the gross floating debt of a company that makes trouble (when there is any) and not the net debt, this is a reprehensible practice. The "*current liabilities*" and the "*current assets*" should be clearly and separately stated, each on its own proper side of the balance sheet. Lake Shore

professes to get along without any "operating" debt. How it does so nobody knows; its balance sheet says it does. Probably it has struck a balance of "*current liabilities*" and "*current assets*."

The only item in the balance sheet to which reference has not been made is that of "*profit and loss*" or "*surplus*," which is generally found on the liabilities side. It should represent an actual surplus, but unfortunately it is seldom represented by anything available on the other side, after "*current liabilities*" are satisfied.

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### CHAPTER III.

#### PHYSICAL STATISTICS.

WE now come to the part of a railroad report which deals with the physical details of operation. We need to know the following points about a railroad:

- (1) *Length and characteristics of road;*
- (2) *Number and description of equipment;*
- (3) *Volume and character of business done (all kinds);*

and under these three heads can be brought all the information necessary to a fair knowledge of a railroad's condition.

#### LENGTH AND CHARACTERISTICS OF ROAD.

Practically every railroad report, worth the name, contains a special statement of the miles of road, first, second, third, and fourth track, and sidings owned by the company, and the mileage operated, controlled, and leased, or in any way connected with the company. Railroad accountants are profuse in this sort of infor-

mation as a rule, as it "gives away" very little. In analyzing a report, the record of "*average miles operated*" is ordinarily the most important item, practically speaking, but such a statement as that indicated above is necessary. The miles of road in each State should also be stated.

Few railroads give in their report the "*characteristics*" of their road, even in a condensed form. One or two do so, for example New York Central. Lake Erie and Western published, this year, a special report on the "*characteristics*" of the company, in such detail, however, as to make it incomprehensible to the layman. There is no reason why a company should not show in its report the percentage of curved line, and the average curve per mile, the number and average rise of grades, and the total length of bridges, etc., stating stone, wooden, and iron separately. This could be done in a reasonable space. At the same time the character of the rails should be stated, both as to main lines and sidings, also the character of ballast.

This would give a fair if rough idea of the character of the road in question, which would shed light on other points. The information described is in the possession of all railroad companies, and they could very easily prepare it for their stockholders. A little diagram showing the profile of the road would also be an acceptable addition. Such diagrams are often eloquent and illuminative.

The statement of track mileage owned is necessary in some detail. A second track is a great factor in operating expenses, as are sidings. Obviously, the character of the rail in the road is important to know. It needs no wizard to predict that a road with any appreciable proportion of iron rails or light steel rails in its

track must, before long, spend a good deal of money for heavy steel rails. It needs the heaviest locomotives running on the heaviest of rails on a well-ballasted track, to make any money on present rates for transportation. Hence the necessity for knowing these things.

Systems like the "Big Four" (C., C., C. and St. L.) which have been built up of a number of small roads, have found themselves obliged in recent years to spend a great deal of money in putting in heavy steel rails, and replacing old equipment, to meet the times. If sufficient attention had been paid to this point by investors in the company, many would have saved themselves considerable money.

The report should state also the total length of wooden, stone, and iron bridges separately. The day of wooden bridges is rapidly passing away, and roads which have not yet replaced them with stone and iron must soon do so. Hence it is desirable to know how much remains to be done in this direction.

#### NUMBER AND DESCRIPTION OF EQUIPMENT.

The same principles apply to the company's equipment statement. There should be a full list of equipment, showing the number of locomotives, and their average weight and age, and the number of each kind of car owned by the company. As regards cars the statement ought to show the general character of the company's equipment, in such a way that the stockholder has a clear idea of how many modern cars of large capacity the company owns, how many old-fashioned cars, and so on. The condition of equipment, moreover, at the date of the report ought to be stated, so that a clear idea can be gained of just what proportion

of equipment is fit for service, what proportion is unfit, and what proportion is totally disabled. This information ought to be given in such a way as to enable ready and close comparison with the previous year's report.

In short, the investor ought to be able to glean from a railroad report enough information as to the character of the company's track and equipment to give him a clear mental picture of the company as a machine ready for work. Especially ought he to be able to judge of the condition of its principal parts from year to year, and whether it is deteriorating or not, for want of attention or renewal.

#### VOLUME AND CHARACTER OF BUSINESS DONE.

Every railroad report should state clearly and in detail the character of its tonnage, with the amount and percentage of each kind of freight. Curiously enough, a good many railroads do not make this statement, as, for example, Burlington and Quincy, and Louisville and Nashville. The importance of such a statement in the case of Burlington is evident, in view of the well-known fact that the road is dependent upon corn to a very great extent.

Their importance is so obvious as scarcely to need pointing out. If a road has a very large tonnage of a given product or manufacture, such as coal, wheat, corn, iron, or so on, it is subject to the special vicissitudes attendant upon that tonnage. Therefore investors should have clearly in mind the general character of the business of their company.

It must be remembered, moreover, that the character of the tonnage has a great bearing on the average rate

received by the company, and will often explain a change in the latter.

The next important thing to know is the "*traffic density*," both for freight and passengers. All railroads report the number of tons carried one mile and the number of passengers carried one mile, with the average rate received per ton and per passenger. To obtain the "*freight density*" divide the ton mileage by the number of miles operated. The result gives the number of tons carried one mile per mile of road, which is the "*freight density*." The same process gone through with the passenger mileage gives the "*passenger density*." The importance of these figures is of course due to the fact that they show the volume of business done by the road very closely, and in such shape that ready comparison is obtainable with any other road.

Almost every report shows the total train mileage, both as to freight and passengers. The importance of this is in the volume of freight and number of passengers carried on an average in each train. Many reports show the average tons and passengers per train mile, but most do not. These figures, however, can be found by dividing the tons and the passengers carried one mile by the freight and passenger train mileage respectively. The result gives the average number of tons carried for each freight-train mile and the average number of passengers carried for each passenger-train mile. Ordinarily the report should show the average number of freight cars empty and loaded in each freight train, and of passenger cars in each passenger train, and the average amount of freight and the number of passengers in each car. This record is important, as showing the character of the management. If there is heavy haulage of empty cars, it means either insufficient



equipment or poor management. If the number of tons per train is small, it argues poor locomotive power, insufficient equipment, bad grades, or else bad management. The report should contain materials for comparison of these figures from year to year. They are extremely important, as an index to the real physical condition of the road.

The report should divide the business of the company into local and through business, and it would also be well to indicate the general direction of the company's business, viz., as eastbound or westbound, and so forth. Local business is the best paying, and a company with a large local business is in a strong position as a rule.

The report should state the average distance that each passenger and each ton of freight is carried. It should also show the average amount of freight in each loaded car. It is furthermore advisable to have a statement of gross earnings, operating expenses, and net earnings per train mile. The more detailed the statement is, the more valuable.

#### GENERAL REMARKS.

There have now been enumerated and discussed the principal points which should be covered in a railroad report. Other points will, of course, readily suggest themselves to any one who has experience of railroad reports. The general heads given, however, comprise what the investor has a right to expect. The more clearly and fully they are covered the better.

The fact is, however, that very few railroads give information upon all the essential points enumerated, especially as regards the physical condition of the property, and its characteristics. The purely financial posi-

tion is sufficiently well covered by a majority of companies. Other companies make a display of giving much information, but what is given is often found upon close examination to be incomplete and insufficient.

Suppose that a company gives, in each of its annual reports, information upon each of the points enumerated in these pages, it is an investor's own fault if he is caught, should trouble overtake the company. It is simply impossible for trouble that could be foreseen to overtake a company without its having been clearly indicated in some department of its report, should that be drawn up honestly, and include details of the items herein referred to.

An effort will now be made to indicate a rough method of analysis applicable to railroad reports, by which an investor may be able to determine the status of his investment, and the true condition of the company in which he has invested.

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## PART II.

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### A SYSTEM OF ANALYSIS APPLICABLE TO RAILROAD REPORTS.

THE analysis of a report implies the rearrangement and combination, in another form, of the information contained therein. If railroad reports were perfect they would need no analysis, for their story would be told in the clearest possible way.

As has been explained in the first part of this book, most railroad reports are faulty in some respect, and chiefly with regard to completeness. Few railroads give enough information. No railroad gives information in such a way that it does not need rearrangement and combination, in order to bring out its real meaning. It is this arrangement and combination which develops the whole story.

There are certain principles which we have to keep in mind on which analysis is based, and it does not seem that any analysis is complete that is not based on them. As has been stated in Part I., there are three things one must know about a railroad, viz.: Its Earning Power, its Financial Position, and its Physical Condition. Everything comes back to these in time. The essential thing to find out about a railroad is whether its earning power is increasing or diminishing, whether its financial condition is becoming stronger or weaker,

and whether its physical condition is improving or deteriorating. Analysis, therefore, is the process of comparing the vital features of a railroad's business with the same features in previous years, and noting progress or retrogression. An effort will be made to indicate the best way of doing this, and, as an ounce of practice is worth a pound of theory, the reports of the Erie Railroad from 1888 to 1893 will be roughly analyzed, so as to show the causes that brought about the Erie's downfall.

There is less objection to taking this road as an example (because it is in receiver's hands and undergoing reorganization) than there might be to taking the case of a road still solvent. Moreover, the case of the Erie is not too complicated to be a good subject for analysis.

If a road cannot pay its fixed charges, in addition to its operating expenses, it needs reorganization. The proportion which fixed charges bear to net earnings and to gross earnings is, therefore, of prime importance. As a preliminary, the volume of gross earnings is important. The first thing we do, therefore, is to ascertain the gross earnings over a series of years. In case there should be an important change in mileage in the period we also bring out "the gross earnings per mile of road," which is a better guide. The following table shows the miles operated, the gross earnings, and the gross earnings per mile:

	Miles.	Gross Earnings.	Gross Earnings Per Mile.
1888. ....	1,035	\$20,840,022	\$20,121
1889. ....	1,035	20,613,104	19,902
1890. ....	1,035	21,834,950	21,081
1891. ....	1,109	23,015,857	20,921
1892. ....	1,102	24,052,067	21,825
1893. ....	1,102	22,613,810	20,520

Only the lines of the Erie proper are taken as only those contained in the "Cost of Road" item in the balance sheet. The changes, it will be seen, are small, and the fluctuations in the amount of gross earnings per mile is not more than can be accounted for by the ordinary fluctuations of business from year to year.

The same process with operating expenses and net earnings shows:

	Operating Expenses.	Net.	Net Per Mile.
1888 .....	\$13,371,465	\$7,468,557	\$7,210
1889 .....	13,208,844	7,404,259	7,148
1890 .....	14,621,361	7,213,588	6,964
1891 .....	15,337,982	7,677,874	6,979
1892.....	16,050,436	8,001,630	7,260
1893.....	14,838,389	7,785,421	7,064

This latter table shows a tendency on the part of "net per mile" to decline, and a disposition toward a heavier ratio of operating expenses, the ratio of which was as follows (excluding taxes):

1888 .....	64.16 per cent.
1889.....	64.08 "
1890.....	66.96 "
1891.....	66.64 "
1892.....	66.73 "
1893.....	65.57 "

The decline in 1893 was due to excessive savings on account of the bad times.

Thus, taking the Erie proper, we have gross earnings per mile about stationary, and a slowly increasing ratio of operating expenses;—a perfectly natural movement, when everything is considered. It may be accounted for by heavier business, and reduced rates;—at least that is what we should expect to find. So far there is

no sign of trouble, and it remains to be seen where this trouble began.

We have seen that the gross and net earnings of Erie, over a period of six years, showed comparatively slight changes, and no changes of any special significance. We now have to see what "charges" they had to provide for. The following table shows the interest on funded debt in gross, and per mile, for the six years:

	Interest.	Interest Per Mile.
1888.....	\$4,755,882	\$4,595
1889.....	4,706,836	4,547
1890.....	4,693,021	4,534
1891.....	4,688,879	4,255
1892.....	4,680,781	4,247
1893.....	4,680,781	4,247

From the table it is very evident that it was not merely interest on funded debt that caused Erie's trouble, as there is a gradual reduction in the interest charges per mile, which is just about enough to offset the reduction in net earnings per mile.

The next item of "charges" is that of "rentals of leased lines," which were as follows (excluding N. Y., Penn. & Ohio for reasons to be explained):

	Rentals.
1888.....	\$1,556,886
1889.....	1,569,971
1890.....	1,607,835
1891.....	1,920,009
1892.....	2,018,458
1893.....	2,009,654

Here are evidently increasing burdens. In the six years "rentals" show an increase of \$452,768. This, however, is hardly sufficient, of itself, to account for the Erie's collapse. Other important items of fixed charges,

viz.: interest on loans, equipment, mortgages, etc., are collected in the following table:

	Miscellaneous Interest Account.
1888 .....	\$380,627
1889 .....	416,701
1890 .....	546,268
1891 .....	434,620
1892 .....	489,914
1893 .....	392,847

This does not show very striking changes in the period, but it is notable that the "interest account" is very heavy for such a small road, and from this it is to be inferred that the company was struggling with considerable "unfunded liability," which is a bad sign.

Taking the company's own statement of "fixed charges" (including taxes) in the period, including the items separately stated above, we have the following table:

	Net Earnings.	All Fixed Charges.
1888 .....	\$7,468,557	\$7,372,568
1889 .....	7,404,259	7,406,492
1890 .....	7,213,588	7,565,596
1891 .....	7,677,874	7,696,276
1892 .....	8,001,680	7,878,325
1893 .....	7,785,421	7,714,784

which agrees in a general way with the results obtained separately, as above, although differently computed. The net earnings are included in the table, in order to show their relation to "fixed charges" and taxes. As we have seen, the increase in "charges" is mainly in rental of leased lines.

Evidently the Erie has been able to show a surplus only by means of its "other income," which, however, is considerable. It is as follows (adding or deducting

the profit or loss on the operations of the N. Y., Pennsylvania & Ohio so as to make the net totals agree with the company's own figures):

	Net Earnings.	Other Income.	All Income.	Surplus.
1888.....	\$7,468,557	\$642,854	\$8,111,411	\$738,842
1889.....	7,404,259	777,009	8,181,268	774,776
1890.....	7,213,588	1,212,250	8,425,838	860,254
1891.....	7,677,874	1,023,979	8,701,853	1,005,377
1892.....	8,001,630	609,954	8,611,584	733,259
1893.....	7,785,421	846,801	8,632,223	917,438

Arguing from this alone, one would say that there was nothing the matter with Erie at all, inasmuch as it was able to show in each of the six years preceding its failure a surplus averaging well up to \$800,000 or more, after deducting losses on certain leased and operated roads except Chicago & Erie, which does not appear at all in the accounts as given above. Evidently, therefore, further search is necessary.

The above statements cover the "Income Account" over six years. There can be no question about the gross earnings, or the "fixed charges." The sole question that can arise is as to operating expenses. Meantime, in default of any more direct evidence than what has been seen, we pass from "Income Account" to the "Financial Statement" or "Balance Sheet."

Taking the balance sheet, therefore, as showing the financial position of the company, and looking first at liabilities we find capital liabilities as follows

	Funded Debt.	Capital Stock
1888.....	\$78,567,245	\$85,515,900
1889.....	77,759,245	85,931,800
1890.....	77,756,325	85,941,500
1891.....	77,664,885	85,951,100
1892.....	77,643,885	85,963,600
1893.....	77,643,895	86,363,600



There is no change of importance in any of these items over the six years, which is what we should have expected from the fact that "interest on funded debt" steadily declined up to 1893. When we come to "floating debt," however, we begin to see something of the trouble.

The following table shows the principal items of floating debt in each of the six years:

	Loans and Bills Payable.	Int. and Rent Due and Accrued.	Vouchers and Payrolls.	Traffic Balances.
1888.....	\$993,320	\$2,151,022	\$1,860,675	\$489,457
1889.....	2,364,356	2,287,194	1,691,142	408,785
1890.....	1,849,865	2,268,958	2,010,675	439,034
1891.....	2,284,633	2,276,399	2,285,957	450,453
1892.....	4,014,671	2,214,922	2,315,523	532,538
1893.....	4,158,670	2,667,863	3,438,908	995,302

In order to exhibit the whole of the floating debt in each year, the following table is given, showing the total of current liabilities, of which the above are the principal constituents:

	All Current Liabilities.
*1888.....	\$5,540,404
1889.....	6,800,541
1890.....	6,626,360
1891.....	7,354,528
1892.....	9,138,765
1893.....	11,328,389

From this it is clear that, in the five years, 1888 to 1893, the Erie doubled its "current liabilities" and more. We need look no further for the source of the trouble. No company could long go on doing as Erie did, in this respect, without eventually falling into the hands of receivers. Still, this by no means exhausts the inquiry, for we have to discover the reason for the creation of this debt.

Before, however, seeking to find out where the proceeds of this debt went, it is useful to summarize the

changes in Erie's liabilities, comparing 1888 with 1893. They are as follows:

Capital stock increased.....	\$847,700	
Current liabilities increased.....	5,787,985	
Surplus profit and loss increased.....	2,364,589	
		<u>\$9,000,274</u>
Less		
Funded debt decreased.....	\$923,360	
Deferred liabilities decreased.....	26,564	
		<u>949,924</u>
Net increase liabilities.....		\$8,050,350

which shows the resources that Erie has disposed of in the five years, 1888 to 1893, without counting whatever has been obtained by disposing of assets. As has been seen, these resources consist altogether of "surplus income" and borrowed money, or floating debt. It now becomes necessary to find out where this money has gone, and why it was expended. It is not enough to trace it merely. We must also endeavor to trace the reasons for its expenditure, for only thus can we reach the root of Erie's embarrassments.

We take first the "capital assets" of Erie comprised in the general item which we may call "cost of road and equipment," and separate them into groups, leaving out, for the present, the item "Estate of the Erie Railway Co." to simplify matters. The following table offers itself:

	Construction and Betterment.	Equipment. Owned.	Paid on Account Equipmt. Trusts.
1888.....	\$6,549,932	\$6,417,707	\$2,867,027
1889.....	7,098,985	6,625,329	3,159,537
1890.....	7,584,625	6,857,581	3,619,118
1891.....	8,024,146	6,879,623	4,477,613
1892.....	8,613,889	8,155,869	4,804,286
1893.....	8,748,162	8,162,139	5,862,461
Increase, 1888-1893,...	\$2,198,230	\$1,744,432	\$2,995,434

From which we see that "*construction and betterments*" absorbed in five years \$2,198,230, and "*equipment*" \$4,739,866, a total of \$6,938,096 for these items.

The following table shows the total of "*cost of road and appurtenances*" in each year:

	Cost of Road, etc.
1888.....	\$164,767,252
1889.....	165,121,358
1890.....	165,959,071
1891.....	167,352,993
1892.....	169,564,155
1893.....	170,687,110
Increase, 1888-1893.....	\$5,919,858

It will be noticed that this increase is less than the increase in "*construction*" and "*equipment*." This is accounted for almost entirely by a decrease of \$981,695 in the item "*estate of Erie Railway Co.*," which we may take as an arbitrary change. We may take it, however, that at least \$5,919,858 of the company's resources have gone into the road in the shape of new "*construction, betterments and equipment*," which accounts for two-thirds of our increased liabilities.

The remaining assets of the Erie Company consist of the following:

1. *Investments in stocks and bonds*;
2. *Advances*;
3. *Current assets*;
4. *Contingent assets*.

In treating these a different grouping will be adopted from that of the company. All advances will be grouped together, whereas Erie carried some of these in "current" and some in "contingent" assets. The following table is, therefore, presented; showing "*invest-*

ments in stocks and bonds," "advances," "current assets," and "contingent assets" in each year, 1888-1893:

	Investments.	Advances.	Current Assets.	Conting. Assets.
1888. ....	\$3,124,935	\$6,119,183	\$3,346,536	\$189,976 •
1889 .....	3,133,235	6,846,246	3,641,100	282,857
1890 .....	3,553,735	6,246,629	3,449,000	320,361
1891 .....	3,753,645	5,071,525	3,715,942	363,790
1892 .....	3,624,395	5,076,550	3,851,753	362,427
1893 .....	3,752,694	6,305,633	4,246,677	606,122

Of these various accounts, "advances" and "contingent assets" are, of course, practically valueless for use in emergency and, indeed, at any time. Examination of "advances" in 1893 shows it to be chiefly composed of losses on subsidiary roads and companies such as the Erie coal companies. In 1893 the item was composed of the following:

N. Y., L. E. & W. Coal and R.R. Co.....	\$1,581,368
Chicago & Erie.....	905,057
Erie Coal Companies.....	1,999,307
Other Companies.....	1,692,642
N. Y., P. & O.....	127,259
	<u>\$6,305,663</u>

All of which, or almost all, are entirely uncollectible. In "contingent assets" there are also grouped a mass of uncollectible "current assets."

Taking all assets, other than those of "cost of road," for five years, and lumping good and bad together, we have the following table. It is necessary to do this in order to show a symmetrical result:

	All Current Assets.
1888. ....	\$12,780,635
1889 .....	13,903,440
1890 .....	13,569,727
1891 .....	12,904,904
1892 .....	12,915,127
1893. ....	14,911,127
Increase, 1888-1893 .....	\$2,130,492

From which it is seen that in the five years Erie increased its nominally available "current" assets by the sum of \$2,130,492.

- Summarizing, therefore, we have the following result:

## INCREASED LIABILITIES, 1888-1893.

Current liabilities increased.....	\$5,787,985
Surplus profit and loss increased.....	2,364,589
Total.....	\$8,152,574
Less decreased funded debt and deferred liabilities, \$102,224	
Net increased liabilities.....	\$8,050,350

## INCREASED ASSETS, 1888-1893.

Cost of road increased.....	\$5,919,858
Current assets increased.....	2,130,492
Net increased assets.....	\$8,050,350

Which shows in a nutshell what has occurred, and why Erie was compelled to go into the courts. It borrowed almost \$6,000,000 of money to spend on the road, and its increased surplus was used up in various ways shown by acquisition of largely unavailable "current assets."

We have yet to trace the disposal of considerable money which does not appear at all in the balance sheets of Erie, and for this we must examine the "Profit and loss" account.

Early in the investigation, we found that Erie showed in each of the six years 1888-1893 a surplus after fixed charges, as follows:

1889.....	\$774,776
1890.....	860,254
1891.....	1,005,377
1892.....	733,259
1893.....	917,438
Total, 1889-1893.....	\$4,291,104

We have an accumulated surplus in the five years, 1889-1893 inclusive, of \$4,291,104. Of this increase there appears in the balance sheet, as seen, only \$2,364,589, leaving a sum of \$1,926,515 to be accounted for.

On examination of "Profit and loss" we find that this sum is to be accounted for as follows:

Chicago and Atlantic interest paid prior to 1890.....	\$721,732
Premiums and discounts.....	493,833
Uncollectible accounts.....	328,409
Dividends preferred stock.....	257,367
Interest on incomes.....	121,920
Commissions.....	3,254
	<hr/>
	\$1,926,515

Of this amount all, except the "dividends on preferred stock" and "interest on incomes," represents practically money lost. Such items as "premiums and discounts" should always be charged off to "Profit and loss," but many roads charge them to "Cost of road," which is entirely wrong in principle. We may say, then, that in the five years, 1889-1893, Erie had to confess practically an absolute loss of about \$1,547,228, exclusive of interest and dividends paid.

We may now recapitulate as follows: In the five years 1889-1893 inclusive, Erie had the following resources:

Increased current liabilities.....	\$5,787,985
Surplus income.....	4,291,104
	<hr/>
	\$10,079,089

which were disposed of as follows:

Dividends and income interest.....	\$379,287
Capital reduced.....	75,660
Deferred liabilities reduced.....	26,564
"Cost of road" increased.....	5,919,858
Current assets increased.....	2,130,492
Charged off to profit and loss.....	1,547,288
	<hr/>
	\$10,079,089

As we have seen, the increase in "current assets" represents, in a large measure, money practically lost. Here, then, we have the secret, at least in part. Any road which has to use up its surpluses in paying losses is in a bad way, to begin with, and that is where, practically, all Erie's surplus in the last five years has gone.

Evidently we have to investigate the main item, viz. : the increase in "cost of road," of which every dollar represents money borrowed. It is here that we expect to find the real weakness of the Erie.

Whenever a road has a steadily increasing "construction account," with only a moderate surplus of earnings, suspicion is invariably aroused with regard to operating expenses. The increasing "construction account," especially when every dollar of increase means borrowed money under circumstances none too advantageous, most certainly means either expenditure charged to that account which ought to go into operating expenses, or else it means dire need of extensive "improvements" and "betterments" which have been rendered necessary by the exigencies of the times to maintain earnings.

In the case of the Erie, where the management is known to be entirely honest and, moreover, able, the latter hypothesis is most probably near the actual facts. It is greatly to be regretted that the matter is hardly capable of direct proof, as the evidence would naturally be largely circumstantial in such cases even were the reports most complete. Still a good deal of interesting detail can be arrayed in regard to the question, from which a pretty close opinion can be formed.

The Erie reports have one great drawback. They do not contain a clear and full statement of the expendi-

tures on "construction account" each year. This means considerable difficulty in tracing expenditures.

The main thing to note is, however, that the company, in the five years 1889-1893 inclusive, spent in all \$4,739,866 on equipment, of which \$2,995,434 was "repayment of car trusts" and similar payments, and \$1,744,432 was for new equipment.

The report is, again, gravely in fault in that it does not give a complete list of the company's equipment, so that one can see the additions in the period. In 1889 the increase in "equipment" was \$207,622, and in "paid on account of equipment" \$292,510, in all \$500,132. The report states that this was represented by car trust payments, and a net addition of twenty-four locomotives. It does not seem that there was any other addition to equipment.

In 1890 "equipment" increased \$232,252 and "paid on account of equipment" \$459,581, a total of \$691,833. The additions to equipment comprised 500 freight cars. Important new car trusts were made, also locomotive trusts, rendered necessary to take care of the increasing business.

In 1891 "equipment" increased only \$22,042 and "paid on account of equipment" \$858,495. The report mentions further shortage of equipment, although stating that the road was better able to do a large business.

In 1892 "equipment" increased \$1,276,246 and "paid on account of equipment" \$326,673. The company bought considerable floating equipment, and acquired title to a certain amount of equipment by paying off of car trusts. The report does not contain any reference to shortage of equipment as hampering the company's business.

In 1893 there is only \$6,270 increase in "equipment,"



and the increase in "paid on account of equipment" is \$1,058,155. The report contains no remarks about want of equipment.

It is quite evident, from what has been seen, that the Erie had to buy its equipment under great disadvantages, especially in the way of car trusts. For years prior to 1889 it had been suffering from this, and, not till 1891, or thereabouts, did it acquire sufficient equipment to conduct its business with any degree of efficiency. The plain truth of the matter undoubtedly is that the Erie was much under-equipped in 1889, and absolutely had to have more rolling stock at any cost. At what cost it acquired it is seen from the amounts paid on "car trusts" and the interest loss attendant on such debts.

Following are some statistics showing the character and growth of the company's freight traffic:

	Tons Carried.	Tons One Mile.	Rate Per Ton-Mile.
1888.....	15,174,009	2,250,878.031	.703 cent.
1889.....	15,084,132	2,355,536.197	.674 "
1890.....	16,307,126	2,556,752.631	.661 "
1891.....	17,851,503	2,747,091.175	.645 "
1892.....	18,334,716	3,017,802.097	.627 "
1893.....	16,461,447	2,599,064.402	.664 "

From this it is clear that Erie had to cope with a increasing business up to 1893, and it is easy to see how the need for equipment arose. The following table gives similar statistics of passenger business:

	Passengers.	Passengers Per Mile.	Per Passenger Per Mile.
1888.....	8,543,684	214,074.981	1.777 cent.
1889.....	10,107,306	237,581.230	1.639 "
1890.....	11,421,734	258,914.054	1.584 "
1891.....	11,832,180	280,786.979	1.545 "
1892.....	12,045,080	283,189.423	1.496 "
1893.....	12,397,063	294,544.837	1.509 "

The passenger statistics are complementary in their showing to those of freight, and are of cumulative importance. We now collect some of the freight-train revenue statistics:

	Gross Per Train Mile.	Net Per Train Mile.	Tons. Per Train.
1888.....	\$1.83	.67 cent.	261
1889.....	1.79	.67 "	265
1890.....	1.65	.57 "	249
1891.....	1.58	.53 "	244
1892.....	1.59	...	253
1893.....	1.64	...	247

Here is no evidence of increasing efficiency; indeed rather the contrary. There is no evidence of the increased equipment doing anything toward improving the company's earnings. It is unfortunate that the net earnings per train mile are not shown for 1892 and 1893. The decrease in 1890 and 1891 is important. It would seem, from the above table, that the equipment was not increased fast enough to offset other unfavorable conditions, and that there was the very greatest necessity for the increase that actually was made. This is borne out by what we have already seen above. The decreased average tons per train is striking, but this is probably due in part, at all events, to other influences.

It is difficult to trace the "equipment" expenditures in the Erie reports, and it is certainly not easy to trace the "construction" expenditures in the five years. The total of additions is \$2,198,230 for the five years, which is classified as follows:

Construction main line increased.....	\$1,817,985
"          branch lines          "          .....	380,245
	<hr/>
	\$2,198,230

It is very clear that Erie had to struggle with insufficient track and terminal facilities, as well as with insufficient equipment; all the time being called upon to meet the most strenuous competition at the hands of such roads as New York Central, Pennsylvania, Lake Shore, etc., with unlimited capital powers and very large earnings. Erie had no means of raising capital save by floating debt. It borrowed as long as it could; spent the money honestly and carefully, but finally had to succumb.

It is evident from what we have seen so far that Erie was in a position commanded by two fires, so to speak. It had always to struggle with adversity, because it was always under-equipped. Owing to its fearful over-capitalization and heavy fixed charges, it had little or no margin of real surplus earnings to draw upon; and it could not sell its bonds, because it had none to sell. It never was physically able to do enough business to meet its charges and keep the road up to standard (which standard meant an ever-increasing degree of efficiency), to meet reduced rates and increased competition. Erie, in short, was an earthenware pot floating among iron kettles in very rough water.

It is a pity that the Erie reports do not supply materials for a more exact showing of construction expenditures. They are plain enough for all practical purposes, but an exact demonstration would have been very interesting.

Up to the present the New York, Pennsylvania & Ohio and the Chicago & Erie portions of the Erie system have been left out of the case.

The net results of the operations of the first named are included, however, in the earnings returns of Erie, either as a profit or a loss. The road was leased for a

certain percentage of its gross earnings, and operated by the Erie. As is well known, it forms the middle portion of the Erie system, of which the Chicago & Erie is the western outlet to Chicago.

In the six years 1888 to 1893, the operations of the New York, Pennsylvania & Ohio resulted in a net loss to Erie of \$1,240,251. This is of itself a comparatively unimportant matter, as the average loss was only about \$200,000 per annum. The real importance of the New York, Pennsylvania & Ohio's influence on Erie's fortunes lay in another direction.

Poorly equipped as Erie was, and insufficient as were its track and terminal facilities, the Erie proper was far in advance of the New York, Pennsylvania & Ohio in all these points. The Erie reports make frequent reference to this.

Here are a few comparative statistics which will serve to exhibit the difference:

	Erie (1889).	N. Y. P. & O. (1889).
Tons per train .....	265	193
Miles per ton .....	156	124
Revenue per freight-train mile.....	\$1.79	\$1.11
Rate per ton per mile .....	.674 cent.	.578 cent.
Operating expenses, per cent.....	64.08	72.68

It is perfectly obvious that the New York, Pennsylvania & Ohio, besides entailing upon Erie an average annual loss of about \$200,000, must have been a constant source of aggravation of Erie's own troubles, and must have greatly hampered Erie in its through business by want of facilities which would permit of fairly economical handling of business. It was even worse off than was Erie, having no credit; and, moreover, perpetually adding to its mortgage liabilities by

the "dividend warrants," convertible into first-mortgage bonds eventually.

The Chicago & Erie, although by no means such a poor piece of property as the New York, Pennsylvania & Ohio, also proved a source of loss and some trouble. Possessing far better grades and very much fewer curves than the New York, Pennsylvania & Ohio, it, nevertheless, was in poor condition when taken over by the Erie, and needed constant expenditures upon it. The rails had to be replaced by heavier rails, and much of the track ballasted. These expenditures were, of course, in theory, to be made from the Chicago & Erie's own resources as provided in the reorganization thereof, but in practice they were made by Erie. Still the road was rather unsatisfactory in most respects, because of its poor condition. The Erie reports do not give details of the operation of the Chicago & Erie in an intelligible form. The road was leased by Erie for  $27\frac{1}{2}$  per cent of its gross receipts, and we have already seen that, in addition, there was the creation of "advances" to Chicago & Erie by the Erie company of \$905,057 between 1890 and 1893. This money, of course, was unrecoverable for all intents and purposes.

We thus have to credit Erie with having lost, in actual money, \$1,240,251 in the New York, Pennsylvania & Ohio in six years, and with having advanced \$905,057 to the Chicago & Erie, a total of \$2,145,308; and also with having been greatly hampered in its operations by these roads forming its connections for extremely competitive business. Evidently this counted for a good deal in bringing Erie's trouble to a head.

It will be remembered that, in speaking of Erie's "income account," it was intimated that Erie's operating expenses were the only item in that account that

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might supply grounds for investigation. Before finally closing our analysis it is necessary to examine this item somewhat minutely, so as to see whether there has been any irregularity in it, or any failure to maintain the property in good condition.

Erie has not followed the inter-state commerce classification of operating expenses in its reports. It divides operating expenses, however, into five classes as follows:

1. *Conducting transportation* ;
2. *Motive power* ;
3. *Maintenance of cars* ;
4. *Maintenance of way* ;
5. *General expenses* ;

When this classification is used, and it is used by a good many roads, "*repairs and renewals of locomotives*" are included in "*motive power*." We extract from the reports, therefore, the following table, showing the details of Erie's expenses over a series of years, and, in order to save space, merely the percentages of the various items are given. They are sufficient for our purpose and admit of readier comparison in that form.

	1888.	1889.	1890.	1891.	1892.	1893.
Cond'g trans. ....	40.6	40.8	41.1	41.0	43.6	43.3
Motive power. ....	29.9	28.5	29.3	29.3	27.8	29.6
Maintenance way. . .	15.1	15.7	15.5	15.6	14.9	13.8
Maintenance cars. . .	11.0	11.3	10.5	11.0	10.9	10.2
General expenses . . .	3.4	3.7	3.0	3.1	2.8	3.1
	<hr/> 100.0	<hr/> 100.0	<hr/> 100.0	<hr/> 100.0	<hr/> 100.0	<hr/> 100.0

In order to show clearly the actual percentage of all "maintenance" items, we take out of "*motive power*" the "*repairs and renewals of locomotives*" for the six years, and show the percentage borne by them to the total of operating expenses as follows:

	1888.	1889.	1890.	1891.	1892.	1893.
Repairs locos. p.c. .	6.4	8.0	7.0	6.0	Not	
“ per mile run, 5.50 c.	6.34 c.	5.41 c.	4.60 c.	stated.		

It is a great pity that the figures for 1892 and 1893 are not given. Unfortunately, there is no way to get them out of the reports for those years. We may notice, however, the decrease in repairs “per mile run” in 1890 and 1891. We must presume that this has continued in 1892 and 1893, as we notice that “*maintenance of cars and roadway*” decreased sharply in those years.

In order to give a general idea of what the figures just presented mean, we set the Erie figures for 1891 beside those of New York Central, showing the percentage of the total borne by each item, and the amount of each item per mile of road:

	Erie (1891).		N. Y. C. (1891).	
	Per Cent.	Per Mile.	Per Cent.	Per Mile.
Conducting trans. . . . .	41.0	\$4,624	43.7	\$4,945
Motive power * . . . . .	23.3	3,264	24.0	2,717
Locomotive repairs . . . . .	6.0	833	4.4	500
Maintenance cars . . . . .	11.0	1,541	8.0	933
Maintenance way . . . . .	15.6	2,175	15.7	1,776

This showing would indicate that Erie maintained its property out of expenses at least as well as New York Central did in 1891, which assures, for that year at all events, a good basis for maintenance and expenditure. New York Central, it is true, has been at all times very free with its capital account, but its maintenance must have been fairly liberal at the same time, and, as we see, Erie makes a fairly good showing as compared with New York Central.

The “maintenance of way” percentage is about the same in the case of both companies in 1891. The cost

\* Excluding repairs and renewals of locomotives.

of maintenance of way per ton hauled on Erie was 13.4 cents, and in the case of New York Central 20 cents per ton, Erie's freight density being 2,477,088 and New York Central's being 1,478,258. Hence the seeming variation between the cost per mile and the cost per ton in each case. Erie's maintenance, therefore, is not so liberal as New York Central's, but still it is good.

We see, therefore, that Erie's operating expenses do not disclose anything wrong, except, perhaps, a little curtailment of maintenance toward the end. If anything were needed to prove the honesty of the management this would be sufficient proof in itself, for Erie was in sore straits for fresh capital at the time. We may safely take it that, on the whole, Erie charged up to operating expenses everything that should be so charged, and perhaps a little more.

This brings us to a summary of results so that the main facts of the case may be brought out.

In the five years 1889 to 1893, Erie claimed to earn a surplus over charges of \$4,291,104, of which it paid in income, interest, and preferred dividends \$379,287, leaving \$3,911,817.

Against this should most certainly have been charged (every year) the loss on the Erie coal companies, which seems to have amounted in the five years to \$1,418,716. This loss was a proper charge against the income of each year, as it is incurred in providing freight for the Erie company. This leaves \$2,493,101.

From this should fairly come the advances to Chicago & Erie made in the period, as the road is operated as part of the system. These advances amount to \$905,057, leaving \$1,588,044. Chicago & Erie securities could never be sold, and the advance is money lost.

Advances to "other companies" increased in the period



\$774,342, and there is *prima facie* ground for supposing that these "advances" were of a character similar to that to the Erie coal companies, *i.e.*, representing money lost in getting business. The loss should, if this is the case, be charged up at once against the returns of that business. We may fairly deduct this \$774,342 from surplus, leaving a balance of \$813,701.

The actual debits to profit and loss in the period covered we have already seen to be \$1,926,515, or \$1,547,228 excluding the dividend payments. It is true that \$721,732 represented loss on the Chicago & Atlantic, some of which was incurred prior to 1889. At least \$400,000 of this, however, comes into the period 1889 to 1890, inclusive. Deducting the \$321,732, we have \$1,225,496 representing amounts charged off to "profit and loss" as wholly uncollectable and unavailable, and as proper charges against surplus. This wipes out the balance of \$813,702, and leaves a deficit of \$411,796, representing five years' operations. It is perfectly safe to say that Erie did not earn its fixed charges in the five years 1889 to 1893 after charging against income all the debits that ought to be charged. The minimum deficit is \$400,000. Probably the true deficit would be a great deal more.

From this it is clear that Erie's fixed charges were too high on the basis of five years' average. This is the first thing that we have established by demolishing the apparent surplus.

Secondly, it is evident that Erie's capital account was compulsorily closed by inability to sell securities before the road's construction was really finished. Necessary construction had to be carried on by creation of floating debt, and the results of the construction expenditures simply enabled the road to hold its business, not to in-

crease it or its net profits. Such "*construction*" really comes under the head of "*maintenance*" and should be defrayed from income.

As we have seen, in the five years 1889 to 1893, Erie spent on "*construction and betterments*" \$2,198,230, and on "*equipment*" \$4,739,866, a total of \$6,938,096, but the reports did not supply materials for showing just how, and for what, this money was spent. We have seen, however, that the expenditure of this money did not increase the efficiency of the road to any important extent or increase the net profits.

Whatever may be the theory about what is and what is not proper capital expenditure, it seems that the real and practical test is whether or not capital expenditure produces increased efficiency and increased net profits. If it does not, and if, as in the case of Erie, it simply enables a road to hold its own, it is evident that it is only doing what operating expenses should be called upon to do. Erie had to struggle with changed conditions under great disadvantages, but the main point is that the change in these conditions was permanent. Even had the Erie had capital resources to draw upon, and even had it drawn upon them, the result would have been the same as regards surplus, for the interest charge on the new capital would not have been earned in addition to what was earned before.

Consequently, we arrive at the conclusion that Erie's fixed charges were too heavy for the road to earn even in average years; that the property, while really unfinished, was grossly over-capitalized, and that the effort to finish its construction, so as to bring it up to date, brought it to the ground.

Hence we should say that Erie needed, most of all, reduction in fixed charges, and next a supply of new

capital, to be used on the improvement and "finishing" of the road.

Before leaving the Erie, which has served us as an example, and before summarizing the main principles on which analysis can successfully be based, it may be said that the Erie reports are faulty: first, because they do not show clearly the loss on the various leased properties (except the New York, Pennsylvania & Ohio), and we cannot tell how much has been lost on each; secondly, because a clear statement of the amounts spent on new construction and equipment in each year is wanting, and is very necessary; and thirdly, because the report does not contain a list of the company's equipment. Many other faults exist, but these are glaring, and it is to be hoped that the new management will see to it that the future reports supply the missing data.

We have now endeavored to trace through a series of reports the troubles that brought to the ground a most important railroad system, and we have obtained certain results. We have employed none but the most obvious methods of analysis, which any investor might employ for himself, and have neglected to touch upon many of the finer points involved.

The main thing, however, for an investor to do is to get the leading facts into his head, and let the finer points and details alone. The object of these remarks is to indicate a way of doing so.

The first thing we did was to examine its "*earning power*," as shown in its "income account" over a series of years. We found that gross earnings were about stationary, as measured per mile of road, (the only true criterion), and that net earnings were also about the same in the period, allowing for ordinary fluctuations

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We saw, however, a steady increase in fixed charges, which we found was due to "*rentals*." This we saw was offset by "*other income*," regarding which the report was unfortunately silent, so that it was impossible to trace. The result was an apparent surplus over fixed charges.

On examining the "*financial position*" of the company, however, we found that the apparent prosperity was coincident with a heavy floating debt of steadily increasing volume, offset partly by "construction expenditures" and partly by nominal assets representing money lost. We found the apparent surplus in reality non-existent, and the road insolvent.

Had the "*physical condition*" of Erie been described fully in the company's reports, we should have found the reason for the heavy construction expenditures. As it was, there was sufficient evidence to locate the trouble, as being the physical unfitness of the road to do enough business to meet fixed charges. This is the lesson of the superficial analysis which we have attempted.

In conclusion then, we offer these suggestions to any reader who proposes to analyze the reports of a railroad company.

Take first the "*income account*" of the company, and set down, for each of a series of years, the total gross earnings, and the gross earnings per mile of road operated. The longer the series of years the better. If there should be a marked change—and if there is, it will be a decrease, for few roads in this country have very greatly increased their gross earnings per mile as compared with ten years ago—it is significant generally of over-extension, or, if there be no great increase in mileage, of some special cause affecting the company's business. A comparison of the schedules showing the

quantity and character of the company's tonnage will throw light on the latter case.

The percentage of operating expenses to gross earnings is the next important item in which to look for changes. If there be an increase, it may be for one or more of many reasons. Lower rates on freight and passengers, a preponderance of low-class freight, insufficient equipment, inferior condition of roadbed, bridges, etc., absence of proper track facilities, bad management as shown in large empty-car mileage; all these things may influence the ratio of operating expenses, and a change needs explanation.

It is a good plan, when dealing with operating expenses, to compare the percentages of maintenance items year by year, as it is in these that the fault will most often be found. A table, such as that given for Erie's expenses, is often productive of good results, and frequently discloses something of importance.

If a road has small gross earnings per mile and a low ratio of operating expenses, it is natural to suspect that the road is not being fairly maintained out of expenses, and a close scrutiny of capital account will perhaps show the secret. If the non-maintenance items of operating expenses show a tendency to absorb an increasing percentage of the whole, the probability is that maintenance is suffering. Hence the desirability of a table showing the percentages as suggested. It will be remembered what it showed in the case of Erie.

A good way, moreover, to check the various details of operating expenses is to calculate the locomotive repairs per mile run, and the repairs of roadway per mile of road and per ton hauled. This, however, is only necessary when operating expenses require close

scrutiny, and is chiefly useful for instituting a comparison with another road.

The relation of net earnings (including "other income") to fixed charges is the next thing to investigate. If the gross earnings and operating expenses do not disclose any very special feature, net earnings from operation will not need much study of themselves. The source of "other income," however, should be investigated as closely as possible, as it may mean a good deal, either favorable or unfavorable.

Obviously, the ratio of fixed charges to net income is a cardinal feature, and any change therein is highly important. It is desirable to reduce both to a "per mile" basis, so as to admit of ready comparison with other roads operating in similar territory. Needless to say, a steady increase in the ratio, either from a decrease in net earnings, or an increase in fixed charges, is a disquieting feature and needs further investigation. If there is no increase in the ratio there is nothing wrong, assuming other items in the "*income account*" to have successfully passed the test of investigation.

If the value of a bond is to be gleaned from the reports of a company, the main point is the margin of net income behind the interest charges on that income. This can easily be found.

Supposing that the "*income account*" passes investigation satisfactorily, both absolutely (as to net result) and by comparison with former years, the next thing to investigate is the "*balance sheet*." Of course, anything in the income account that needs investigation, as, for example, great changes in the operating expenses, other income, fixed charges, etc., should be at once followed up through those parts of the report where further information is given bearing on those items.

The "*liabilities*" are, in a sense, the most important side of the balance sheet. The funded debt will explain any change in fixed charges, and, if it does not, the unfunded floating debt will do so. The movement of the funded debt over a series of years, and, particularly, the movement of the floating debt, are important to note. Needless to say, the causes for an important increase of one or the other are at once to be sought. The same remarks apply to an increase of capital stock, though, of course, a change in funded or floating debt is much more important, as involving fixed and serious liability. If there is an increase of liabilities, capital or current, its influence on the assets side of the balance sheet need very careful investigation.

In a general way, the principle may be laid down that an increase of *current liabilities* should be represented by an increase in *current* and *quick assets*, unless it is a purely temporary matter, awaiting only the issue of securities for settlement. Inasmuch as all *current liabilities* are, so to speak, pressing and immediate liabilities, it is of great importance that the corresponding assets be available. An increase of floating debt which is represented by uncollectible accounts, losses on leased or subsidiary roads, advances to proprietary companies, etc., is usually a bad sign.

Again an increase of *current liabilities*, represented by an increase in "*cost of road and equipment*," is unsatisfactory. In fact, whenever there is a floating debt of any consequence in addition to the ordinary "operating debt" there is need for close scrutiny of the circumstances of its creation. It is natural for a road to owe money for wages, traffic balance, and supplies, etc., but it is not natural for it to borrow money on its notes. When it does so, the reason should be made clear.

In looking at *current assets*, "cash," "bills receivable," and "accounts receivable," when in moderate volume, are to be assumed, in default of evidence to the contrary, to be available assets; as also are "due from agents" and probably "due from companies, or individuals," but "advances to other companies," or any similar item should be explained. Every railroad should divide its *current assets* into "*quick assets*" and "*contingent assets*," and, failing this, the first duty of an investor is to make this division for himself, as far as he can, from the items as given in the report.

In general, current items on each side of the account should at least fairly offset each other, year by year. At all events *current liabilities* should not greatly exceed *current assets* without very good and sufficient reason being shown therefor. In strict theory, probably, *current* and *quick assets* should equal *current liabilities*, and the surplus to "profit and loss" account taken together. The more nearly this standard is approached the better. Unfortunately very few roads have a real or available "*surplus*."

The changes in capital or mortgage liabilities should be found in *capital assets* as corresponding changes. If, in increase of funded debt, a capital stock is represented by a corresponding increase in "*cost of road and equipment*," the additional mileage and equipment should be investigated carefully, and the cost thereof compared with the cost of the whole as closely as possible. If "*investments in stocks and bonds*" contain a large portion of the increase, the stocks and bonds acquired should be separated from the rest and their cost estimated.

All leases should be examined as to whether or not they are profitable. A large increase in "*rentals*" in



fixed charges will of course show in the *income account* and will call for attention in the examination of that department. Even if there is no increase in these the results of operations of leased roads are always important. More often than not they throw much light on the value of "*investments in stocks and bonds*," as roads leased are also frequently controlled by ownership of a majority of the capital stock.

In short, any important change on either side of the balance sheet needs explanation by a close examination of the corresponding changes on the other side, by a "translation," so to speak, of the items. As already said, if railroad reports were perfect they would need no translation or analysis.

In examining the physical statistics and the results of operation, the growth of the business of the company as shown in its "*freight density*" and "*passenger density*" should be observed; as also any radical change in the character of the tonnage carried, the average train load, the average haul per ton and per passenger, and the average rates per ton per mile and per passenger per mile. As illustrating the efficiency of the trackage accommodation the loaded and empty car mileage is important. Any important changes in the revenue and expenses per train mile will have shown itself in the *income account* in gross earnings and operating expenses, but additional information is desirable on the point. The average efficiency of each locomotive in miles run, and of each car in tons carried, is a good thing to watch from year to year; while, of course, the proportion of equipment unfit for service is to be carefully noted from year to year, as a guide to the efficiency of maintenance.

The gradual conversion of light rails into heavy rails,

the improvement of ballast, the conversion of wooden bridges into stone and iron, the reduction of grades, the straightening of curves; all these are things which are a necessary concomitant of successful railroad operation in these days, and progress therein should be carefully noted.

The proportion of "local" to "through" business must be watched as having a bearing on rates and operating expenses. Mileage of foreign cars throws light on the sufficiency or insufficiency of equipment owned. A hundred other points will suggest themselves to any one who has a great deal of experience in the study of railroad reports. The number of possible combinations of information, all of which are productive of fresh light on the whole is almost infinite. We have enumerated only a few of the most obvious.

In the bringing these pages to a close, it should be stated that from the beginning the object aimed at has been the suggestion to investors of a means whereby they can deduce for themselves from a report the essential facts regarding the condition of their property. Only the general principles involved have been treated, and they have been treated without any pretension to technical or expert methods. It is nevertheless hoped that they may prove of service to investors in general, who have not hitherto made it a habit to study the reports of railroads in which they are interested.



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